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IS 14270-4 (1997): Shipbuilding - Pyrotechnic distress signals for ships, Part 4 White flare signal [TED 19: Marine Engineering and Safety Aids]

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पोत निर्माण — समुद्री जहाजों के लिए आतिशबाजी द्वारा विपत्ति संकेत

भाग 4 श्वेत अग्नि संकेत — विशिष्टि

Indian Standard

SHIPBUILDING — PYROTECHNIC DISTRESS SIGNALS FOR SHIPS

PART 4 WHITE FLARE SIGNAL — SPECIFICATION

ICS 71.100.30; 47.040

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

March 1997

Price Group 3

Marine Instruments and Safety Aids Sectional Committee, TED 20

FOREWORD

This Indian Standard (Part 4) was adopted by the Bureau of Indian Standards, after the draft finalized by the Marine Instruments and Safety Aids Sectional Committee had been approved by the Transport Engineering Division Council.

Pyrotechnic distress signal form parts of the lifeboats and liferafts equipment in accordance with *Life Saving Appliances Rules*, 1986 under the *Merchant Shipping Act*, 1958.

The Indian Standards covering the whole range of pyrotechnic distress signals are being published in the following parts:

Shipbuilding—Pyrotechnic distress signals for ships :

Part 1 General requirements
Part 2 Red flare parachute signal
Part 3 Red star rocket signal
Part 5 White flare parachute signal
Part 6 Explosive shell signal
Part 7 Explosive rocket signal
Part 8 Orange smoke signal
Part 9 Red flare signal

These standards are based on GB 3107. 1—3107. 9-1982 'Standards of pyrotechnic signals for ships', issued by the China State Bureau of Standard.

The composition of the Committee responsible for the preparation of this standard is given in Annex A.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian standard

SHIPBUILDING — PYROTECHNIC DISTRESS SIGNALS FOR SHIPS

PART 4 WHITE FLARE SIGNAL — SPECIFICATION

1 SCOPE

This standard(Part 4) specifies sizes, material and tests for white flare signal for communications among the Rescue station. Marine rescue units and distress ships and people or for avoiding collision of ships. Its performance conforms to the stipulations of SOLAS convention 1974.

2 REFERENCE

IS 14270 (Part 1) : 1995 'Shipbuilding—Pyrotechnic distress signals for ships : Part 1 General requirements', is a necessary adjunct to this standard.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 14270 (Part 1) : 1995 shall apply.

4 FORM AND SIZE

4.1 White flare signal for ships is a handle type flame model flare signal, ignited either by pulling or by striking. Its main components include:

a) Signal chemical sticks,
b) Ignition device,
c) Shell and handle,
d) Connecting items, and
e) Safety cap and top cap.

4.2 The outer diameter of the white flare signal for ships shall not exceed 40 mm, and its total length shall not be more than 240 mm. Its total weight shall not exceed 260 g.

5 CONSTRUCTION AND GENERAL REQUIREMENTS

5.1 White flare signal for ships shall conform to IS 14270 (Part 1) : 1995.

5.2 The signal after igniting by pulling or striking shall have continuous:

a) White flame which can be set on by handle.
b) White flare strength not less than 15 000 cd.
c) White flare duration for not less than 60 seconds.
d) White flare colour as per the diagram stipulated by International Illumination Committee, its chromaticity area limit is within the scope of the following coordinates.

X	0.525	0.525	0.450	0.310	0.443
Y	0.382	0.440	0.440	0.283	0.382

5.3 Signal chemical stick shall be made of gun powder, ignition chemical, signal chemical, etc, and its outer diameter shall not be less than 35 mm, and weight shall not be less than 70 g.

5.4 Ignition device shall conform to the stipulation of 4.1 of IS 14270 (Part 1) : 1995.

5.5 Shell shall be made of plastic or equivalent material and it shall have a suitable long handle.

5.6 Connecting item and handle shall be made of plastic or equivalent material, its one end is connected to the signal shell and the other to the safety cap.

5.7 Safety cap and top cap shall be metallic or plastic, its height shall not exceed 25 mm and outer surface shall be knurled and red in colour. Metal cap shall undergo anti-corrosive treatment.

5.8 The outer shape and composition, of the signal shall conform to the stipulations of 4.2 of IS 14270 (Part 1) : 1995.

5.9 The signal in release condition, without the safety cap, shall be immersed in 10 cm deep water for 1 minute and its utility performance shall not be affected.

5.10 When subjected to a salt spray (20 percent sodium chloride solution) at a temperature of 35±3°C for at least 100 h the signal shall function effectively.

5.11 This signal after burning for 5 minutes is immersed into 10 cm deep water and it shall maintain its efficacy for 10 seconds.

5.12 The signal while igniting shall not have any blind fire, explosion or mishap. While burning, it shall not burn down the liferaft or the hand of the person releasing it.

5.13 The signal, when freely dropped from a height of 3 m on a steel plate shall not ignite, or explode and its utility performance shall not be affected.

5.14 The test for the validity period of the signal shall conform to the stipulations of **6.4.2** of IS 14270 (Part 1) : 1995.

6 TESTING

6.1 Test methods of the signal shall conform to the stipulations of IS 14270 (Part 1) : 1995.

6.2 Flare Strength and Duration Test

6.2.1 Determination of the flare strength shall be done by using 'ST' type or equivalent lux meter, under the test lab conditions of simulated black body and without any wind. Starting from 5th second of ignition, 5 values are taken at an interval of 5 seconds and after calculating its average value, the result shall be arrived at as per the following formula:

$$I = AS^2$$

where

I = flare strength of the light source, in candela :

A = luminous intensity of light source perpendicular to lux meter; and

S = distance of the lux meter from the light source, m.

6.2.2 Flame duration is determined by stop watch, when measuring the flare strength of the flame till it has died out.

6.2.3 The flare strength and flare duration of each batch of products is taken separately to calculate the average value of each test samples.

6.3 Flare Chromaticity Test

Flare chromaticity is measured by using colorimeter in the flare chromaticity area limit or under the sunlight by the measurement method, using human eyes in which standard white colour sample plates, as per the stipulations of **5.2** of this standard, are compared with its colour. This test may be conducted simultaneously with the flare strength measurement.

6.4 Release Test

Release test is done by pulling the handle of the signal holding it above the head at an angle of 45°.

6.5 The vibration test, dropping test, low temperature test, high temperature test and general performance test of the signal shall conform to the stipulations as in **5.2** to **5.5** and **5.8** of IS 14270 (Part 1) : 1995.

7 INSPECTION

7.1 Product inspection of the signal shall conform to the stipulations of **6.1** to **6.4** of IS 14270 (Part 1) : 1995.

7.2 Items, scope, sequence and the quantity of selected samples in each group for the delivery inspection of the signal shall conform to the stipulations given in Table 1.

7.3 Items, scope, sequence and the quantity of the selected samples for the demonstration test of the product shall conform to the stipulations given in Table 2.

Table 1 Acceptance Tests

Sl No.	Requirements	Clause Ref	Sample Size
i)	Outer shape of signal chemical sticks and its quality	5.2 to 5.4 and 5.12	3 percent of the quantity handed over for inspection from every batch, but not less than 10 sticks
ii)	Outer shape of ignition device, connecting items, etc, and their quality	5.4 to 5.8	
iii)	External appearance, marks and packings	5.8, 8 and 9	
iv)	Water proof performance	5.9 to 5.11	Not less than 3 sticks from every batch
v)	Release test	5.2, 5.9, 5.12 and 6.4	May use the test samples after the water proof test
vi)	Validity period test	5.14	

Table 2 Demonstration Test
(*Clause* 7.3)

Sl No.	Requirements	Clause Ref	Sample Size
i)	Vibration	Separately as per 6.5	Not less than 3 of each items
ii)	Dropping	Separately as per 5.13	
iii)	Low temperature, High temperature	Separately as per 6.5	
iv)	Water proof performance	As per 5.9 to 5.11	
v)	Release test	As per 5.2 to 5.9 to 5.12 and 6.4	May use the test samples after the water proof test.
vi)	General performance	As per 5.8 of IS 14270 (Part 1) : 1995	Not less than 12 pieces
vii)	Validity period test	As per 6.4 of IS 14270 (Part 1) : 1995	

8 MARKING

8.1 The packing container of every shell and finished goods of the signal products and its shipment packing cases shall conform to the requirements stipulated in 7 of IS 14270 (Part 1) : 1995.

8.2 Performance parameter of the product shall also include the flare strength and duration.

9 PACKING

Packing of the signal product shall conform to the stipulations of 8 of IS 14270 (Part 1) : 1995.

10 STORAGE

Storage of the signal product shall conform to the stipulations of 9 of IS 14270 (Part 1) : 1995.

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

Marine Instruments and Safety Aids Sectional Committee, TED 20

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Capt S. S. Naphade	DG Shipping, Mumbai
Members	
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Cdr A. P. V. Thampan	Ministry of Defence, Directorate of Systems, New Delhi
Asstt Dir of Systems [W] (*Alternate*)	
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(*Continued on page 5*)

(*Continued from page 4*)

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Cmde Ratan Singh	Directorate of Standardization, Ministry of Defence, New Delhi
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Shri K. S. Subramaniam	Institution of Marine Technologists, Mumbai
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